



Taxonomic Paper

New records of *Ticapimpla* Gauld, 1991 (Hymenoptera: Ichneumonidae: Pimplinae) from Brazil and French Guiana, with taxonomic notes

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Abstract

Background

We report the genus *Ticapimpla* Gauld, 1991 from French Guiana and the species *Ticapimpla amazonica* Palacio et al., *T. carinata* Palacio et al., *T. matamatae* Palacio et al. and *T. soinii* Palacio et al. from Brazilian Amazonia. The new discoveries suggest that the genus is widely distributed in Amazonian lowland rain forests. In addition, we diagnose and illustrate the males of *T. carinata* and *T. matamatae* for the first time. Short diagnoses and layer-photos for all the Amazonian species are provided.

New information

The genus *Ticapimpla* is reported for the first time from French Guiana and the species *T. amazonica*, *T. carinata*, *T. matamatae* and *T. soinii* from Brazilian Amazonia. In addition, the males of *T. carinata* and *T. matamatae* are diagnosed and illustrated for the first time.

Keywords

Koinobiont, Amazonia, Neotropical, parasitoid wasps, *Polysphincta* genus-group, South America, tropical, rain forests, spiders.

Introduction

Ticapimpla Gauld, 1991 is a small Neotropical genus belonging to the *Polysphincta* group of genera. *Ticapimpla* species structurally resemble species of *Acrotaphus* Gravenhorst and *Hymenoepimecis* Viereck. These three genera share the following set of features: 1) occipital carina strongly raised and forming a flange-like protuberance (in most species), and 2) epomia absent (Gauld 1991, Gauld and Dubois 2006). *Ticapimpla* is easy to distinguish from *Acrotaphus* and *Hymenoepimecis* by having densely hirsute mesoscutum and the complete submetapleural carina (Palacio et al. 2010). In addition, the species of *Ticapimpla* are usually smaller than the species of *Acrotaphus* and *Hymenoepimecis*. Nothing is known about the biology of *Ticapimpla* but species of the *Polysphincta* group of genera are known to be koinobiont ectoparasitoids of active spiders (Gauld and Dubois 2006).

Ticapimpla includes five described species known from Costa Rica (Gauld 1991), Ecuador, Colombia and Peru (Palacio et al. 2010) and Brazil (Loffredo and Penteado-Dias 2008).

The aim of the paper is to report the genus for the first time from French Guiana and the species *T. amazonica* Palacio et al., 2010, *T. carinata* Palacio et al., 2010, *T. matamatae* Palacio et al., 2010 and *T. soinii* Palacio et al., 2010 from Brazilian Amazonia. In addition, we diagnose and illustrate the males of *T. carinata* and *T. matamatae* for the first time and provide diagnoses and layer-photos for all the Amazonian species.

Materials and methods

The specimens examined in this paper are deposited in the following natural history collections: Invertebrate Collection of Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas state, Brazil - INPA (Curator: Marcio L. Oliveira), Museu Paraense Emílio Goeldi, Belém, Pará state, Brazil - MPEG (Curator: Orlando T. Silveira), Museu de Zoologia da Universidade de São Paulo, São Paulo, São Paulo state, Brazil - MZUSP (Curator: Carlos R.F. Brandão) and Zoological Museum, Biodiversity Unit, University of Turku, Turku, Finland - ZMUT (Curator: Ilari E. Sääksjärvi).

Morphological terminology follow Gauld 1991, except for tarsal claws that follow Palacio et al. 2010.

Digital images were taken using a CANON DS126461 digital camera attached to an OLYMPUS SZX16 stereomicroscope. The captured images were assembled with the software Zerene Stacker (Version 1.04) and edited in Adobe Photoshop CS6.

The distributional data of the species was obtained from the labels and Palacio et al. (2010). The new country records of the genus were marked with “**” and new species records with “*”. The maps were made using SimpleMappr (<https://www.simplemappr.net>). In the distributional maps of *Ticapimpla* species, red circles indicate known records and yellow stars indicate new records. One symbol may represent many specimens.

Taxon treatments

Ticapimpla amazonica Palacio, Broad, Sääksjärvi & Veijalainen, 2010

Nomenclature

Ticapimpla amazonica Palacio, Broad, Sääksjärvi & Veijalainen, 2010 - Palacio et al. 2010.

Materials

- a. country: French Guiana; countryCode: GF; locality: M. de Kaw, Patawa; eventDate: ii.2003; individualCount: 1; sex: female; lifeStage: adult; recordedBy: O. Morvan; institutionCode: ZMUT
- b. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 12.vi.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- c. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 13.xi.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- d. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 04.xii.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- e. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 10.vii.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- f. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 21.viii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- g. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 14.viii.1985; individualCount:

- 2; sex: 1 male and 1 female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- h. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 17.vii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- i. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 24.iv.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- j. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 30.x.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- k. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1113, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°26'02"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: vii.1986; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA

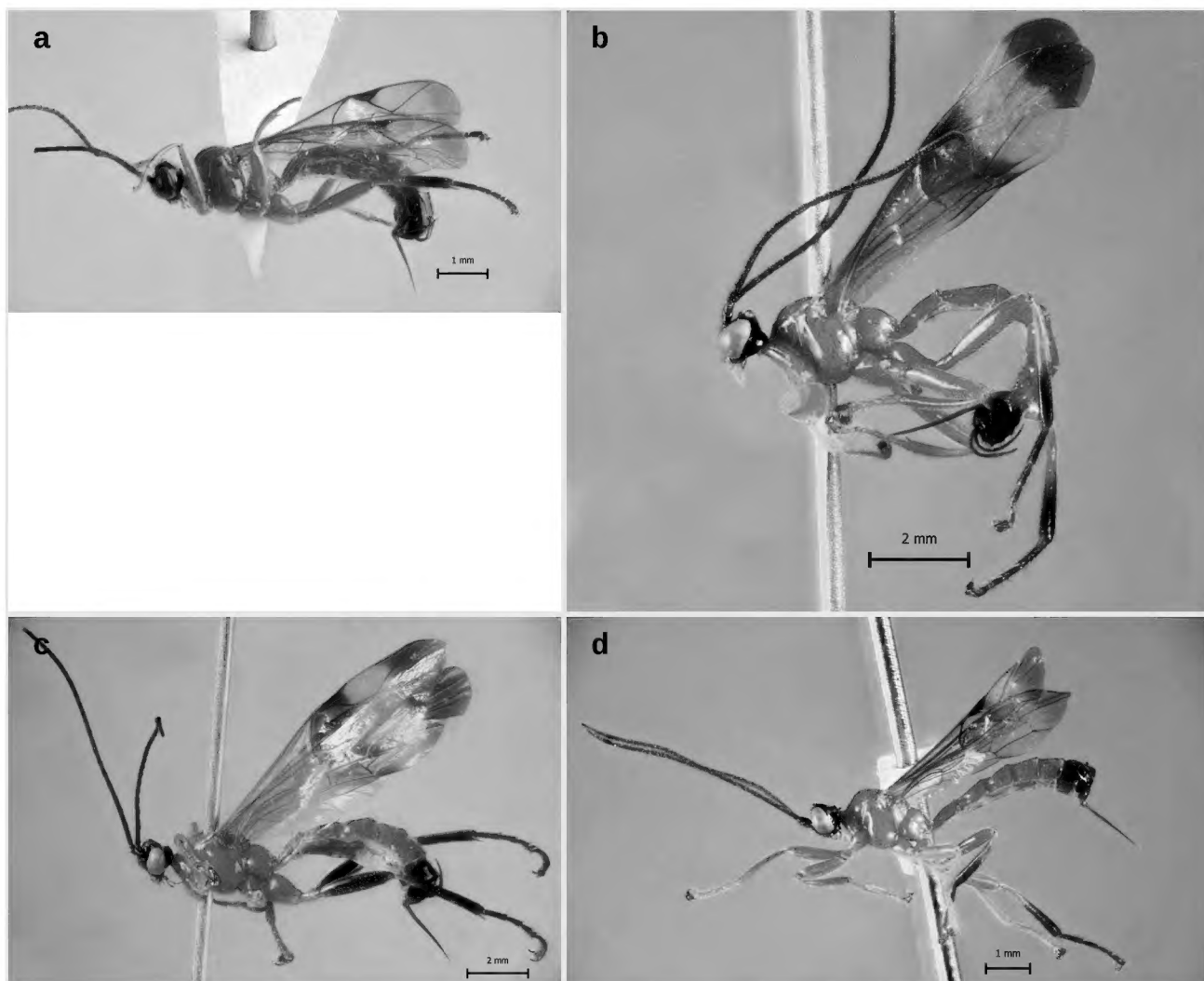


Figure 1.

Females of the Amazonian *Ticapimpla*, habitus.

a: *T. amazonica* Palacio et al., 2010 [doi](#)

b: *T. carinata* Palacio et al., 2010 [doi](#)

c: *T. matamatae* Palacio et al., 2010 [doi](#)

d: *T. soinii* Palacio et al., 2010. [doi](#)

- I. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Igarapé Bolívia; samplingProtocol: Malaise trap; eventDate: 10.ii.2003; individualCount: 1; sex: female; lifeStage: adult; recordedBy: J.M.F. Ribeiro; institutionCode: INPA

Diagnosis

This species can be distinguished from all other species of *Ticapimpla* by the combination of the following characters: 1) tarsal claw without auxiliary tooth, with a quadrangular flattened lobe, lobe with inner margin slightly convex (tarsal claw simple, without auxiliary tooth or preapical lobe in male); 2) epicnemial carina short, present only ventrally; 3) fore wing infumate (or very faintly infumate) with a weakly yellowish band between junction of vein *R*1 up to pterostigma until middle of the vein *M*; 4) hind leg orange, with distal 0.6 of tibia and tarsus black; 5) metasoma orange with tergites VI+ black; 6) occipital carina not forming a strongly raised flange in the occiput (Fig. 1a, Fig. 2a, Fig. 3a, Fig. 4a).

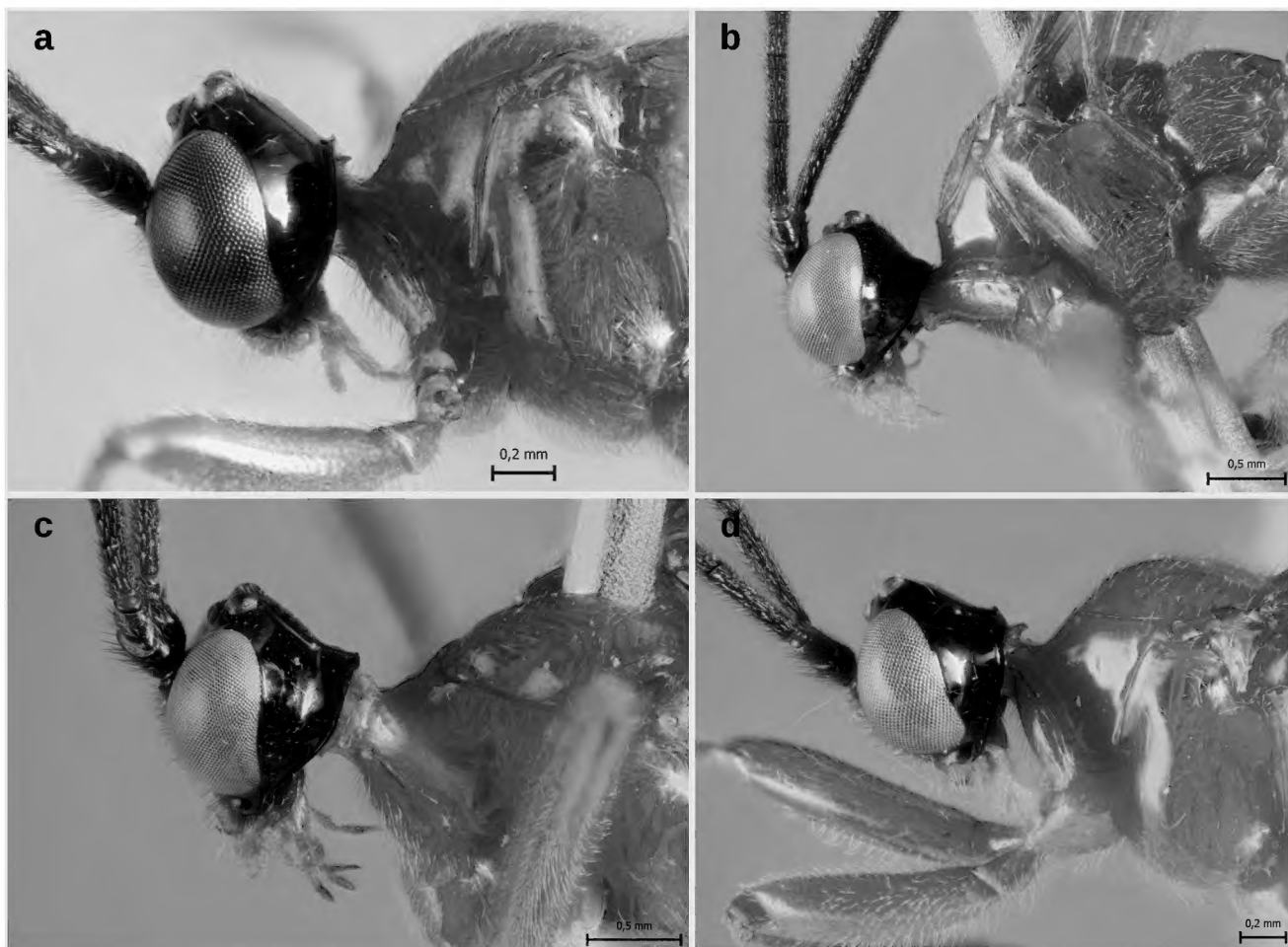


Figure 2.

Heads of the Amazonian *Ticapimpla* species, lateral view

a: *T. amazonica* Palacio et al., 2010 [doi](#)

b: *T. carinata* Palacio et al., 2010; [doi](#)

c: *T. matamatae* Palacio et al., 2010 [doi](#)

d: *T. soinii* Palacio et al., 2010. [doi](#)

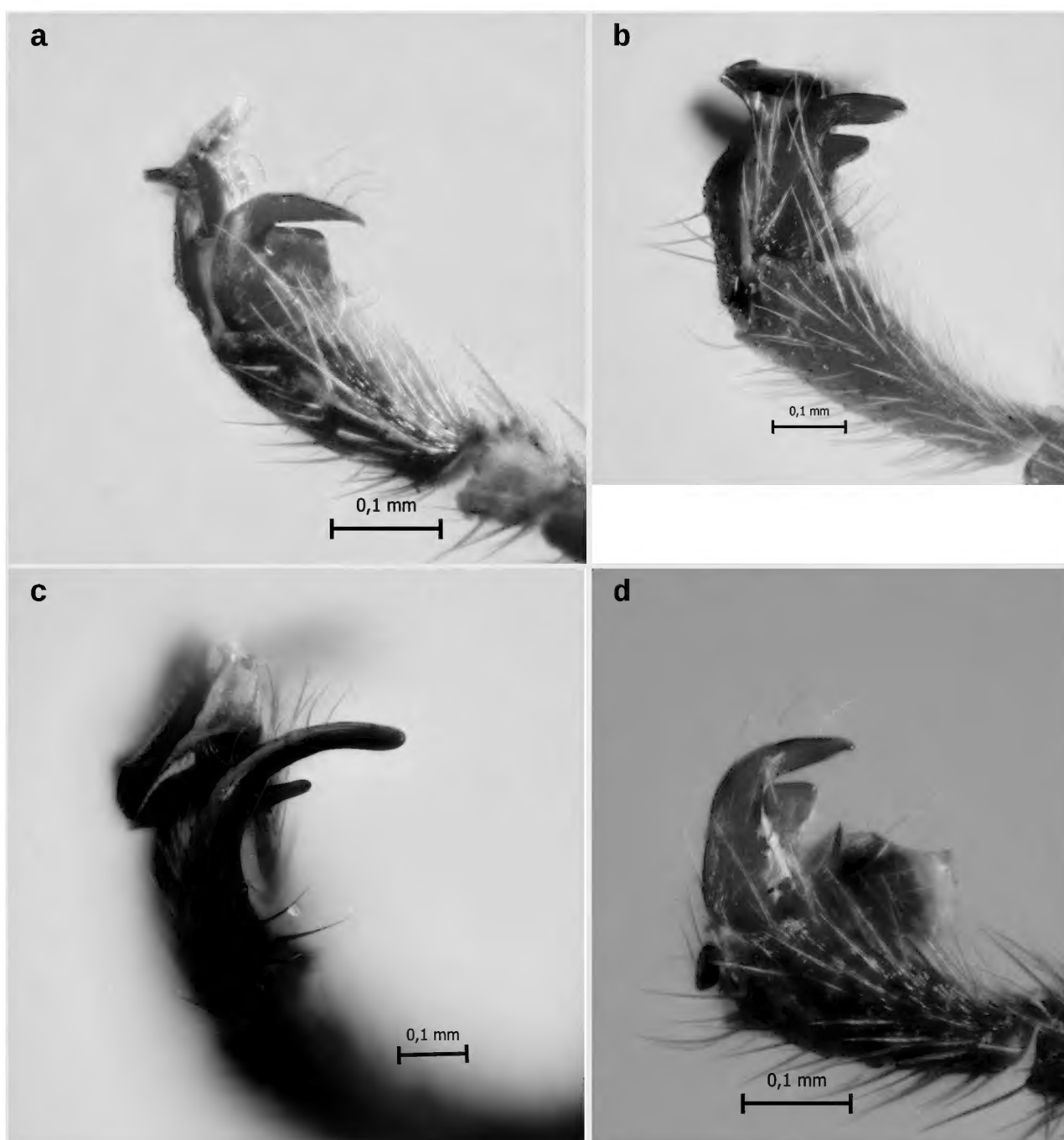


Figure 3.

Tarsal claws of the females of Amazonian *Ticapimpla* species, lateral view.

a: *T. amazonica* Palacio et al., 2010 [doi](#)

b: *T. carinata* Palacio et al., 2010 [doi](#)

c: *T. matamatae* Palacio et al., 2010 [doi](#)

d: *T. soinii* Palacio et al., 2010 [doi](#)

Distribution

Brazil*, Ecuador, French Guiana** and Peru (Fig. 5a).

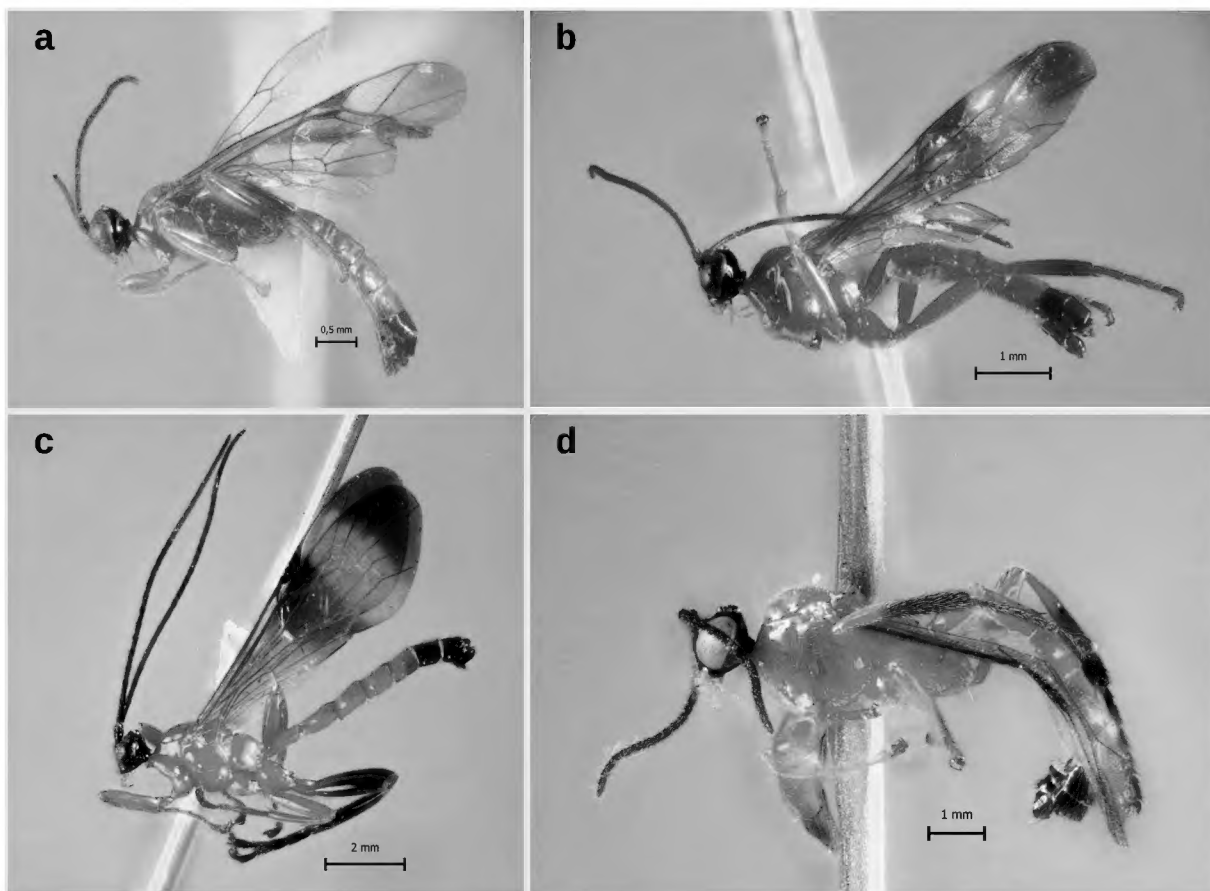


Figure 4.

Males of the Amazonian *Ticapimpla*, habitus.

a: *T. amazonica* Palacio et al., 2010 [doi](#)

b: *T. carinata* Palacio et al., 2010 [doi](#)

c: *T. matamatae* Palacio et al., 2010 [doi](#)

d: *T. soinii* Palacio et al., 2010 [doi](#)

Ticapimpla carinata Palacio, Broad, Sääksjärvi & Veijalainen, 2010

Nomenclature

Ticapimpla carinata Palacio, Broad, Sääksjärvi & Veijalainen, 2010 - Palacio et al. 2010

Materials

- a. country: French Guiana; countryCode: GF; locality: M. de Kaw; eventDate: ix.2002; individualCount: 1; sex: male; lifeStage: adult; recordedBy: J. Cerda; institutionCode: ZMUT
- b. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 15.v.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- c. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 13.xi.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- d. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S,

- 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 04.xii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- e. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 30.x.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- f. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 21.viii.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- g. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 19.vi.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- h. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1113, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°26'02"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: iv.1986; individualCount: 2; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA

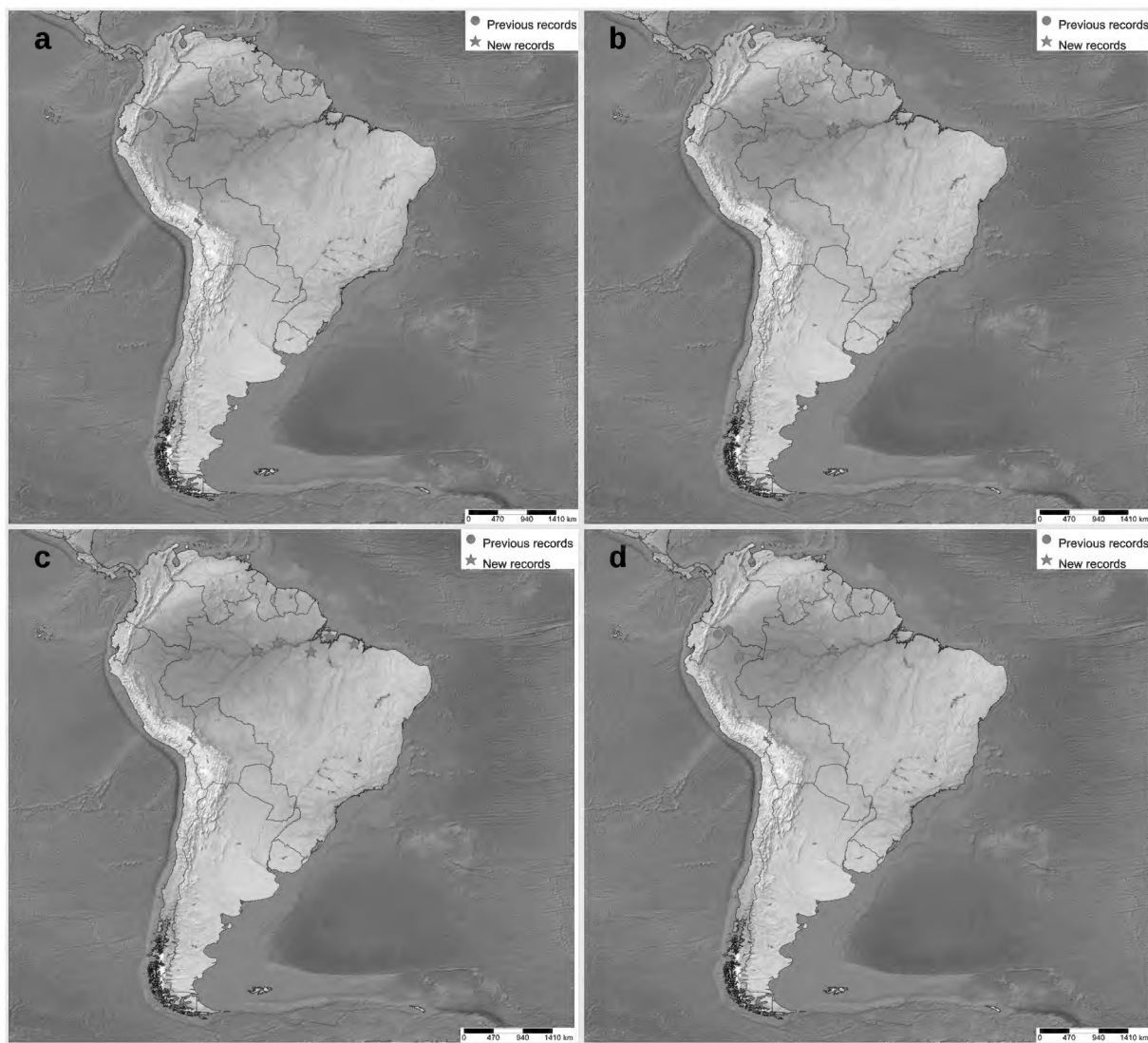


Figure 5.

Distribution of *Ticapimpla* species in tropical South America.

a: *T. amazonica* Palacio et al., 2010 [doi](#)

b: *T. carinata* Palacio et al., 2010 [doi](#)

c: *T. matamatae* Palacio et al., 2010 [doi](#)

d: *T. soinii* Palacio et al., 2010 [doi](#)

- i. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1208, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°22'34"S, 59°52'39"W; samplingProtocol: Malaise trap; eventDate: 16.vii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- j. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1208, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°22'34"S, 59°52'39"W; samplingProtocol: Malaise trap; eventDate: 11.vi.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- k. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1208, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°22'34"S, 59°52'39"W; samplingProtocol: Malaise trap; eventDate: 06.viii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- l. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1208, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°22'34"S, 59°52'39"W; samplingProtocol: Malaise trap; eventDate: 03.xii.1985; individualCount: 1; sex: male; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- m. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke; samplingProtocol: Malaise trap; eventDate: 23.ix.1986; individualCount: 1; sex: male; lifeStage: adult; recordedBy: L. Ulisses; institutionCode: INPA
- n. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Igarapé Uberé; samplingProtocol: Malaise trap; eventDate: vii.2001; individualCount: 1; sex: female; lifeStage: adult; recordedBy: J.M.F. Ribeiro; J. Vidal & J.A. Vidal; institutionCode: INPA
- o. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Mata; samplingProtocol: Fruit bait; eventDate: 23-27.xiii.2000 [sic]; individualCount: 1; sex: female; lifeStage: adult; recordedBy: R. Ale-Rocha; J.F. Vidal & A.P. Marques; institutionCode: INPA
- p. country: Brazil; countryCode: BR; stateProvince: Amazonas; locality: Rio Nhamundá, Cuipiranga; verbatimCoordinates: 01°53'58"S, 57°02'59"W; samplingProtocol: Suspense trap; eventDate: 20-23.v.2008; individualCount: 1; sex: female; lifeStage: adult; recordedBy: R. Ale-Rocha and team; institutionCode: INPA

Description

Male (Fig. 4b). Similar to female in structure and coloration, but body about 5.0–7.0 mm; tarsal claw simple, without auxiliary tooth or preapical lobe.

Diagnosis

This species can be distinguished from all other species of *Ticapimpla* by the combination of the following characters: 1) tarsal claw with auxiliary tooth and with inner margin strongly concave (tarsal claw simple, without auxiliary tooth or preapical lobe in male); 2) epicnemial carina short, present only ventrally; 3) fore wing infumate, with a weakly yellowish band between junction of vein *R*₁ up to pterostigma until middle of the vein *M* or very faintly yellowish with apex and area adjacent to pterostigma of fore wing clearly infumate; 4) hind leg orange, with distal 0.6 of tibia and

tarsus black; 5) metasoma orange with tergites VI+ black; 6) occipital carina forming a strongly raised flange in the occiput (Fig. 1b, Fig. 2b, Fig. 3b, Fig. 4b)

Distribution

Brazil*, Colombia, French Guiana** and Peru (Fig. 5b).

Ticapimpla matamatae Palacio, Broad, Sääksjärvi & Veijalainen, 2010

Nomenclature

Ticapimpla matamatae Palacio, Broad, Sääksjärvi & Veijalainen, 2010 - Palacio et al. 2010

Materials

- a. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva 1301, Fazenda Esteio, PDBFF; verbatimCoordinates: 02°23'03"S, 59°51'15"W; samplingProtocol: Malaise trap; eventDate: 17.vii.1985; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Klein; institutionCode: INPA
- b. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: EMBRAPA, Cultivo de Guaraná orgânico, Ponto Mata; verbatimCoordinates: 02°53'29.14"S, 59°58'45.80"W; samplingProtocol: Malaise trap; eventDate: 11.x.2012; individualCount: 1; sex: female; lifeStage: adult; recordedBy: K. Schoeninger; institutionCode: INPA
- c. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Igarapé Bolívia; samplingProtocol: Malaise trap; eventDate: 10.ii.2003; individualCount: 1; sex: female; lifeStage: adult; recordedBy: J.M.F. Ribeiro; institutionCode: INPA
- d. country: Brazil; countryCode: BR; stateProvince: Amazonas; locality: Rio Nhamundá, Cuipiranga; verbatimElevation: 22 m; samplingProtocol: Malaise trap; eventDate: 20-23.v.2008; individualCount: 1; sex: male; lifeStage: adult; recordedBy: J.A. Rafael et al.; institutionCode: INPA
- e. country: Brazil; countryCode: BR; stateProvince: Pará; municipality: Melgaço; locality: ECFPn, Percorso 1, Trilha 3, Tijucaquara; eventDate: 24.vi.1998; individualCount: 1; sex: female; lifeStage: adult; recordedBy: O. Silveira & J. Dias; institutionCode: MPEG
- f. country: Brazil; countryCode: BR; stateProvince: Pará; municipality: Altamira; locality: Rio Xingú, A1-Itapuama, S. Antônio; samplingProtocol: Malaise trap; eventDate: 19-23.vii.2008; individualCount: 1; sex: male; lifeStage: adult; recordedBy: without collector; institutionCode: MPEG
- g. country: Brazil; countryCode: BR; stateProvince: Maranhão; locality: Aldeia Maracaçumé, Rio Maracaçumé; eventDate: v.1963; individualCount: 1; sex: female; lifeStage: adult; recordedBy: B. Malkin; institutionCode: MZUSP

Description

Male (Fig. 4c). Similar to female in structure and coloration, but body about 7.0 mm; tarsal claw simple, without auxiliary tooth or preapical lobe.

Diagnosis

This species can be distinguished from all other species of *Ticapimpla* by the combination of the following characters: 1) tarsal claw with a preapical auxiliary tooth (tarsal claw simple, without auxiliary tooth or preapical lobe in male); 2) epicnemial carina entirely absent; 3) fore wing yellowish, with apex infumate and with an infumate median band extending backwards from anterior margin, just proximal to the pterostigma, right until the junction of the veins *Rs&M* with *cu-a*; 4) hind leg orange, with femur, tibia and tarsus black; 5) metasoma orange with tergites V+ or VI+ black; 6) occipital carina forming a strongly raised flange in the occiput (Fig. 1c, Fig. 2c, Fig. 3c, Fig. 4c).

Distribution

Brazil* and Colombia (Fig. 5c).

Ticapimpla soinii Palacio, Broad, Sääksjärvi & Veijalainen, 2010

Nomenclature

Ticapimpla soinii Palacio, Broad, Sääksjärvi & Veijalainen, 2010 - Palacio et al. 2010

Materials

- a. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: EMBRAPA, Cultivo de Guaraná convencional, Point Mata; samplingProtocol: Moerick trap; eventDate: 26.x.2012; individualCount: 1; sex: male; lifeStage: adult; recordedBy: K. Schoeninger; institutionCode: INPA
- b. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Igarapé Uberé; samplingProtocol: Malaise trap; eventDate: vi.2003; individualCount: 1; sex: female; lifeStage: adult; recordedBy: J.M.F. Ribeiro & J. Vidal; institutionCode: INPA
- c. country: Brazil; countryCode: BR; stateProvince: Amazonas; municipality: Manaus; locality: Reserva Ducke, Igarapé Ipiranga; samplingProtocol: Malaise trap; eventDate: 31.xii.2002; individualCount: 1; sex: female; lifeStage: adult; recordedBy: J.A. Vidal & J. Vidal; institutionCode: INPA

Diagnosis

This species can be distinguished from all other species of *Ticapimpla* by the combination of the following characters: 1) tarsal claw without auxiliary tooth, instead with a preapical, flattened lobe, lobe with inner margin concave (tarsal claw simple, without auxiliary tooth or preapical lobe in male); 2) epicnemial carina short, present only ventrally; 3) fore wing very faintly yellowish, the fore wing with apex and area adjacent to pterostigma infumate; 4) hind leg orange, with distal 0.6 of tibia and tarsus black; 5) metasoma orange with tergites VI+ black; 6) occipital carina forming a strongly raised flange in the occiput (Fig. 1d, Fig. 2d, Fig. 3d, Fig. 4d).

Distribution

Brazil*, Colombia, Ecuador and Peru (Fig. 5d).

Discussion

Palacio et al. (2010) proposed that *Ticapimpla* is a taxon of South American origin. Only one species, *T. vilmae* Gauld, 1991, is known from Central America. In South America, the genus is best represented in Amazonian lowland rain forests.

Palacio et al. (2010) reported most of the specimens from Western Amazonia. The present study shows that the genus is widely distributed in Amazonia. Interestingly, despite of studying a vast number of new ichneumonid samples collected from Amazonia, we have not been able to discover new species of *Ticapimpla*. This indicates that this genus is among the best known Pimplinae genera in the Neotropical region.

Acknowledgements

We are grateful to all curators for the loan of material; the Zoological Museum of University of Turku for the use of the layer-image laboratory; the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for scholarship to DGP (159696/2015–1) and the project CNPq/PVE for the scholarship SWE model to DGP (208243/2017–8).

References

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- Palacio E, Broad G, Sääksjärvi I, Veijalainen A (2010) Western Amazonian *Ticapimpla* (Hymenoptera: Ichneumonidae: Pimplinae): four new species from Colombia, Ecuador, and Peru, with a key to species of the genus. Psyche: A Journal of Entomology 2010: 1-8. <https://doi.org/10.1155/2010/161595>